Space Weather Forecast

Issued on Thursday 26 September 2024 at 01:25 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm Day 1 (26 Sep). Chance of Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity is Moderate with a Moderate-class flare observed in the past 24 hours.

Eight sunspot regions cover the visible disc. One region, in the southeast of the disc, is the largest and bi-polar. A second region in the southwest is the second largest, and is a uni-polar spot and continues to decay slowly. A smaller region in the northwest, has seen recent emergence of spots in both the lead and trailing portions. A fourth region in the southeast, close to centre disc, has shown further minor development in its southern portion. The remaining regions are either small, simple, or have shown little change since last analysis.

A Coronal Mass Ejection (CME) observed 22-23 Sep, directed primarily to the south and east, mostly away from Earth. This is now delayed but a glancing blow in the first few hours of Day 1 (26 Sep), is still possible. No other Earth-directed CMEs were observed.

Solar Wind / Geomagnetic Activity: The solar wind at slightly elevated levels 400-420km/s, reached Elevated levels of 500-520 km/s by 25/0550-0850 UTC. Solar winds have since eased and are at Slightly Elevated levels. The Interplanetary Magnetic Field, was moderate for a time then eased back to Weak levels after 25/1200 UTC. The important north-south component has been at Weak to Moderate levels and mostly southward directed.

Geomagnetic activity has been at mostly Unsettled to Active levels, peaking at G1/Minor Geomagnetic Storm between 25/0300-0600 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels throughout.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of further isolated Moderate flares.

Solar Wind / Geomagnetic Activity: The Coronal Mass Ejection (CME) following a flare off the southeast quadrant on 22 Sep may still give a glancing blow at Earth for the next few hours of Day

---

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

1 (26 Sep). Earth is also currently connected to a stream of coronal hole fast winds. Solar winds are currently slightly elevated and are likely to remain at similar levels before gradually easing by the end of Day 2. If we experience a glancing blow from the aforementioned CME then solar winds could be potentially enhanced, back to Elevated levels, otherwise a slow return towards background levels is likely by Day 4 (29 Sep).

Geomagnetic activity is forecast to be Unsettled to Active with further Minor Storm intervals possible over the next few hours given the potential CME arrival. Geomagnetic activity is likely to gradually ease to Quiet to Unsettled by the end of Day 1 (26 Sep). However, if we see more significant influence from the CME, then geomagnetic activity could become more significantly enhanced, with a slight chance of reaching Moderate-Strong Storm intervals. This is currently considered to be very low confidence.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to be at background levels with just a very slight chance of solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	5	1	1
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	30	30	40	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.